

# **Exhibit 2**

## **FILED UNDER SEAL**

*HIGHLY CONFIDENTIAL-ATTORNEYS' EYES ONLY*

**IN THE UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION**

GOOGLE LLC,

*Plaintiff,*

v.

SONOS, INC.,

*Defendant.*

Case No. 3:20-cv-06754-WHA  
Related to Case No. 3:21-cv-07559-WHA

**REBUTTAL EXPERT REPORT  
REGARDING DAMAGES**

**January 13, 2023**

Respectfully Submitted,



W. Christopher Bakewell

110. The accused products for the '885 patent include home audio players, smart speakers, streaming devices and smart home systems.<sup>225</sup> The accused products for the '966 patent includes Google Home app installs on computing devices (*e.g.*, smartphones).<sup>226</sup> Mr. Malackowski claimed that Sonos and Google compete in a general home audio player “market,” which in Mr. Malackowski’s view includes high-end “home theater” products.<sup>227</sup> Mr. Malackowski also offers general statements, such as that Sonos and Google “actively compete in the smart speaker market.”<sup>228</sup>
111. Mr. Malackowski does not appear to consider that Sonos and Google focus differently on market segments and customers. Sonos targets audiophiles and those that appreciate high-end music quality, and a “home premium” segment.<sup>229</sup> Google’s smart speakers are generally targeted at more mainstream audiences, including price conscious customers.<sup>230</sup>
112. Many Sonos’s speakers such as the Sonos One SL, Sonos Five, and Sonos Roam SL, as well as the now discontinued Sonos Play:5 speaker are not smart speakers or voice-enabled (*see Exhibit 14.1*). In contrast, Google’s accused speakers are voice-enabled (*see Exhibit 14.2*). Also, several Sonos speakers are soundbars and subwoofers (such as Arc, Beam and Sub) used in a home theater setting; Google does not offer products such as sound bars or subwoofers that are intended for use in a home theater setting (*see Exhibit 14.2*).<sup>231</sup>

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<sup>225</sup> Almeroth Report, pp. 45-48; Malackowski Supplemental Report, pp. 28-29.

<sup>226</sup> Malackowski Supplemental Report, p. 29; Almeroth Report, pp. 8-10.

<sup>227</sup> Malackowski Supplemental Report, p. 19.

<sup>228</sup> Malackowski Supplemental Report, pp. 19-20.

<sup>229</sup> Interview of Mr. Chan; SONOS-SVG2-00053537-574 at 545; SONOS-SVG2-00055769 at 806; “Sonos One Review: The Best Smart Speaker For Audiophiles,” *The Guardian*, February 15, 2018 (accessed: [www.theguardian.com/technology/2018/feb/15/sonos-one-review-best-smart-speaker-audiophiles-amazon-alexa](https://www.theguardian.com/technology/2018/feb/15/sonos-one-review-best-smart-speaker-audiophiles-amazon-alexa)); “How Smart-Speaker Maker Sonos Plans to Take on Apple, Google and Amazon,” *Variety.com*, June 20, 2018 (accessed: [https://variety.com/2018/biz/features/sonos-apple-google-amazon-1202850159/?sub\\_action=logged\\_in](https://variety.com/2018/biz/features/sonos-apple-google-amazon-1202850159/?sub_action=logged_in)); “Sonos CEO On Tech Competition: We’re The Story Of Software Eating Audio,” *Yahoo Finance*, March 10, 2021 (<https://www.yahoo.com/video/sonos-ceo-tech-competition-story-175816392.html>); Deposition of Chris Chan, November 29, 2022, pp. 102-103, 120.

<sup>230</sup> Interview of Mr. Chan; Deposition of Chris Chan, November 29, 2022, pp. 119-121.

<sup>231</sup> Further illustrating these differences, I have observed that Sonos’s products are sold in different sections of Best Buy stores than Google’s.

companions located within a smart speaker that are able to synthesize and respond to user commands in real time.”<sup>451</sup> Here, it appears that Mr. Malackowski acknowledged that demand for the accused products is driven by features that are not related to the ‘885 and ‘966 patents.

255. Mr. Malackowski also stated that, “(b)ased on the above financial information,” where Mr. Malackowski provided negative gross profits for the ‘885 accused products and the number of Google Home app installations, “it is clear that there is strong demand for the Accused Instrumentalities which use the patented invention.”<sup>452</sup> But this information, too, is not specific to the ‘885 or ‘966 patents.
256. Mr. Malackowski also stated that “demand for the Accused Instrumentalities is impacted by the Asserted Patents in this case” because “the Asserted Patents teach, among other things, features that are expected by consumers of the Accused Instrumentalities, and those features are included in Google’s Home Mini, Nest Mini, Home, Home Max, Home Hub, Nest Hub, Nest Hub Max, Nest Audio, Nest WiFi Point, Chromecast, Chromecast Audio, Chromecast Ultra, and Chromecast with Google TV products, among others.”<sup>453</sup> Mr. Malackowski did not provide any basis or cite to any documents for this claim—this includes how many consumers “expected” the features, as he claimed.
257. Mr. Malackowski did not measure how many users desired the technology of the ‘885 and ‘966 patents, how often the technology was used, or if there was any impact of these patents on unit sales or revenues. Surveys produced by Google and Sonos generally do not mention or list “zone scene” or “overlapping speaker groups” (*see Exhibit 13.0 and Exhibit 13.1*). This information was produced and available to Mr. Malackowski, and it was identified as relevant in Sonos’s supplemental damages disclosures.<sup>454</sup>
258. Mr. Malackowski stated that “the ‘966 Accused Instrumentalities are composed of devices that have installed the Google Home app.”<sup>455</sup> Mr. Malackowski claimed that “Google has not

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<sup>451</sup> Malackowski Supplemental Report, pp. 19-20, citing SONOS-SVG2-00056368-373 at 369.

<sup>452</sup> Malackowski Supplemental Report, pp. 108-109.

<sup>453</sup> Malackowski Supplemental Report, pp. 127-128.

<sup>454</sup> Sonos’s Second Supplemental Damages Disclosures Pursuant To Local Rule 3-8, November 1, 2022, pp. 27-30.

<sup>455</sup> Malackowski Supplemental Report, p. 109.

provided sufficient information to calculate net revenue or gross profit associated with such devices.”<sup>456</sup> Mr. Malackowski must know that sometimes companies do not always (or even usually, depending on the level of granularity sought) keep such information in the ordinary course. Often, this information can be estimated on an as-needed basis through basic financial analysis and cost allocations. It is not reasonable for Mr. Malackowski to frame this lack of information as a criticism in the way that he has.

259. Mr. Malackowski estimated that “approximately 169.5 million devices have installed the Google Home app over the relevant infringement period.”<sup>457</sup> Mr. Malackowski then claimed that this supports his opinion, stating “it is clear that there is strong demand for the Accused Instrumentalities which use the patented inventions.”<sup>458</sup> But this information is not specific to demand for the ‘966 patent, either. It is merely the number of instances that the Google Home app was installed and is not specific to infringement.
260. Without studying demand specific to the ‘885 patent, Mr. Malackowski merely tallied Google’s accused hardware devices sold during the period from November 24, 2020 through November 15, 2022.<sup>459</sup> Similarly, without studying demand specific to the ‘966 patent, Mr. Malackowski merely tallied the number of Google Home app installs on smartphones, laptops and tablets during the period from November 5, 2019 through November 15, 2022.<sup>460</sup> Mr. Malackowski did nothing to show what impact the ‘885 and ‘966 patents had in terms of increased unit sales or changes in prices, that is, demand. I recap this below at a high level, and then address these issues in more detail in **Section 5.3**.
261. Relying on Dr. Almeroth, Mr. Malackowski stated that “Google had provided users the ability to use the features contained in the Accused Instrumentalities as early as December 2015.”<sup>461</sup> But Mr. Malackowski cited to no information showing that there was any impact from the alleged infringement, including any additional unit sales or revenues resulting from making this change. Although Google might have provided the ability as early as 2015, there is no

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<sup>456</sup> Malackowski Supplemental Report, p. 109.

<sup>457</sup> Malackowski Supplemental Report, p. 109.

<sup>458</sup> Malackowski Supplemental Report, p. 109.

<sup>459</sup> Malackowski Supplemental Report, pp. 80-90.

<sup>460</sup> Malackowski Supplemental Report, pp. 8-9, Appendix 3.1.

<sup>461</sup> Malackowski Supplemental Report, p. 129.

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[REDACTED]<sup>466</sup> Even for Google Home Max, the accused functionality was not enough to keep the product on the market.

265. Mr. Malackowski did not appear to mention a 2018 Sonos survey which showed that features such as “sound quality,” “ease of use,” “ease of set-up” and ability to “play music over Wi-Fi,” among others, were considered by the survey respondents as the “most important” features” in wireless speakers.<sup>467</sup> The ability to “play music in multiple rooms” (9% of the respondents), “play different music in different rooms” (7% of respondents), and “play the same song throughout my home” (5% of respondents) had relatively lower rankings compared to “sound quality.”<sup>468</sup> Even for Sonos customers, who are reasonably assumed to be more discerning, Mr. Malackowski does not show that they find the technology of the ‘885 and ‘966 patents to generate demand in a significant way.<sup>469</sup>
266. Mr. Malackowski disregarded usage data produced by Google for the accused smart speakers, smart displays and streaming devices in the United States. This data covers the period from May 5, 2022 through November 10, 2022.<sup>470</sup> This data includes what I understand to be several potential commands for grouping that I understand can potentially apply: static, dynamic, static stereo pair and dynamic stereo pair. I begin with discussing all four commands, and then discuss what the data shows for what I understand to be narrower applicable commands.

<sup>466</sup> GOOG-SONOSNDCA-00058536-611, at 598.

<sup>467</sup> SONOS-SVG2-00054685-730 at 707.

<sup>468</sup> I understand, though, that such functionality is more general and broader than the ‘885 and ‘966 patents. Interview of Dr. Schonfeld.

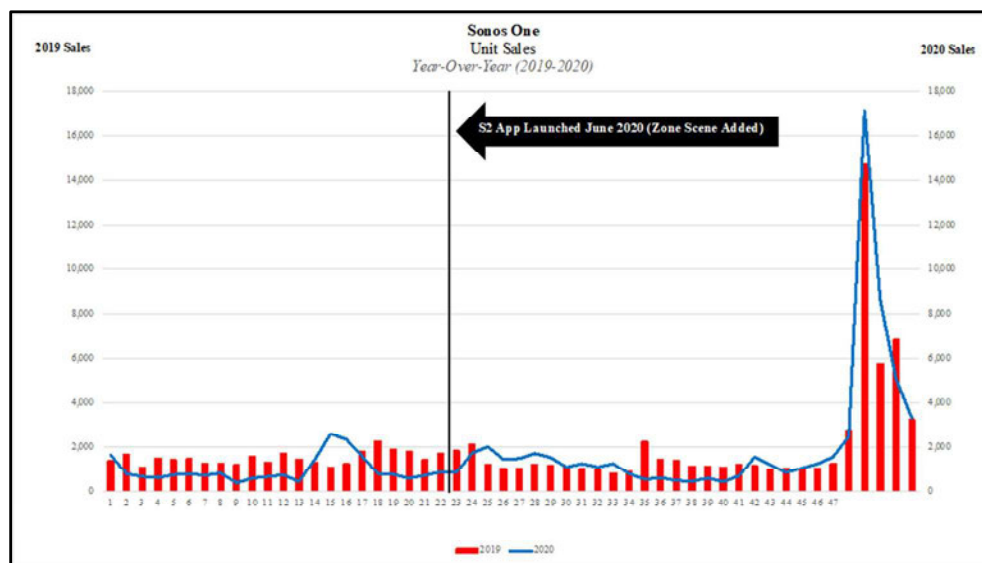
<sup>469</sup> To this end, a 2018 Sonos survey showed that features such as “sound quality,” “ease of use,” “ease of set-up” and ability to “play music over Wi-Fi,” among others, were considered by the survey respondents as the “most important” features” in wireless speakers. SONOS-SVG2-00054685-730 at 707. As I discussed above, Mr. Malackowski did not consider that Sonos and Google focus differently on market segments and customers. Sonos more targets audiophiles and those that appreciate high-end music quality, and a “home premium” segment. Interview of Mr. Chan; SONOS-SVG2-00053537-574 at 545; SONOS-SVG2-00055769 at 806; “Sonos One Review: The Best Smart Speaker For Audiophiles,” The Guardian, February 15, 2018 (accessed: [www.theguardian.com/technology/2018/feb/15/sonos-one-review-best-smart-speaker-audiophiles-amazon-alexa](http://www.theguardian.com/technology/2018/feb/15/sonos-one-review-best-smart-speaker-audiophiles-amazon-alexa)); “How Smart-Speaker Maker Sonos Plans to Take on Apple, Google and Amazon,” Variety.com, June 20, 2018 (accessed: [https://variety.com/2018/biz/features/sonos-apple-google-amazon-1202850159/?sub\\_action=logged\\_in](https://variety.com/2018/biz/features/sonos-apple-google-amazon-1202850159/?sub_action=logged_in)); “Sonos CEO On Tech Competition: We’re The Story Of Software Eating Audio,” Yahoo Finance, March 10, 2021 (<https://www.yahoo.com/video/sonos-ceo-tech-competition-story-175816392.html>). Google’s smart speakers are generally targeted at more mainstream audiences, including price conscious customers. Interview of Mr. Chan.

<sup>470</sup> GOOG-SONOSNDCA-00117827 (tab titled “Multizone US Events-Daily”).



277. There is other data that shows a lack of interest in the speaker grouping. Mr. Malackowski has not shown that even for Sonos, which has a customer base more oriented towards multi-room audio,<sup>493</sup> there was any discernable evidence of changes in consumer behavior as a result of implementation of “zone scene” in Sonos’s products. Sonos did not introduce the “zone scene” functionality to its own products until June 2020.<sup>494</sup> The following graphic compares the weekly unit sales in 2019 (as indicated by the red bars) to the weekly unit sales in 2020 (as indicated by the blue line). Unit sales of the Sonos One during the periods before and after the launch of the S2 app in June 2020, show no discernable change at the point when “zone scene” functionality was introduced:

**Sonos One Unit Sales  
Before And After “Zone Scene” Added In June 2020**



278. Mr. Malackowski also did not identify economic evidence to support that there was significant impact from the technology of the ‘885 and ‘966 patents over a longer term. The following graph plots unit sales for 2021 (in blue) and prior years (in green and red). Introduction year

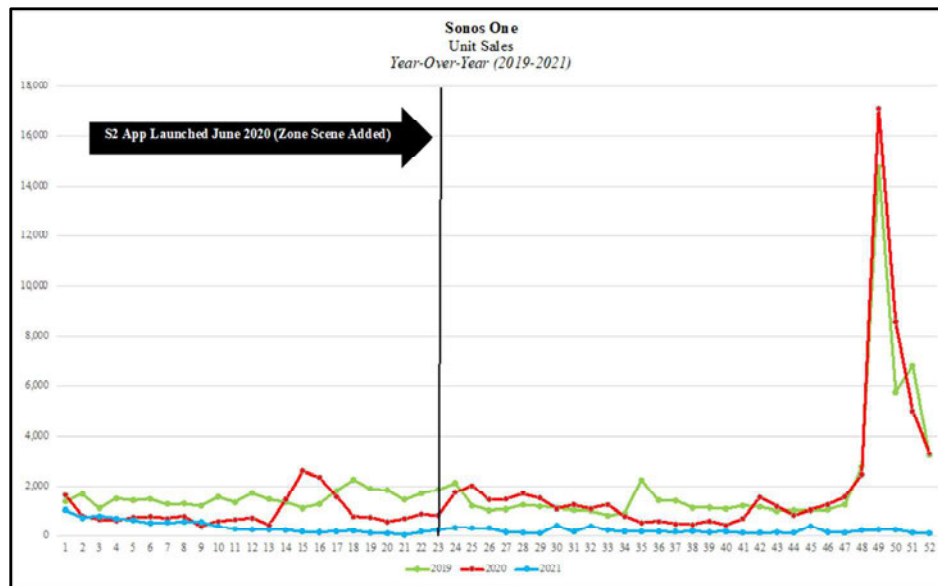
<sup>493</sup> Interview of Mr. Chan; SONOS-SVG2-00053537-574 at 545; SONOS-SVG2-00055769 at 806; “Sonos One Review: The Best Smart Speaker For Audiophiles,” The Guardian, February 15, 2018 (accessed: [www.theguardian.com/technology/2018/feb/15/sonos-one-review-best-smart-speaker-audiophiles-amazon-alexa](http://www.theguardian.com/technology/2018/feb/15/sonos-one-review-best-smart-speaker-audiophiles-amazon-alexa)); “How Smart-Speaker Maker Sonos Plans to Take on Apple, Google and Amazon,” Variety.com, June 20, 2018 (accessed: [https://variety.com/2018/biz/features/sonos-apple-google-amazon-1202850159/?sub\\_action=logged\\_in](https://variety.com/2018/biz/features/sonos-apple-google-amazon-1202850159/?sub_action=logged_in)); “Sonos CEO On Tech Competition: We’re The Story Of Software Eating Audio,” Yahoo Finance, March 10, 2021 (<https://www.yahoo.com/video/sonos-ceo-tech-competition-story-175816392.html>); Deposition of Chris Chan, November 29, 2022, pp. 102-103, 112-113.

<sup>494</sup> Malackowski Supplemental Report, pp. 13 and 30.



of the “zone scene” functionality did not appear to generate unit sales differences compared to other years or timeframes:

**Sonos One Unit Sales  
Before And After “Zone Scene” Added In June 2020  
(2019-2021)**



279. When Sonos added the “zone scene” functionality in June 2020, it was along with the release of the S2 app; this included many changes, including new features and support.<sup>495</sup> For example, in its press announcements Sonos touted that, “(w)ith S2, Sonos speakers now have support for high resolution audio.”<sup>496</sup> A June 2020 article described the anticipated release of the S2 app as follows, noting that “room groups is neat but not terribly exciting in and of itself.”<sup>497</sup>

*Only one specific feature of S2 has so far been outlined, and that's something called 'Room Groups'... **Room Groups is neat but not terribly exciting in and of itself.** Thankfully, Sonos has also talked up a few other upgrades that sound much more thrilling even though they've not yet been fully detailed...The big one as far as we're concerned is an increase in audio bandwidth that will enable the introduction of "higher resolution technologies for music and home theatre."*

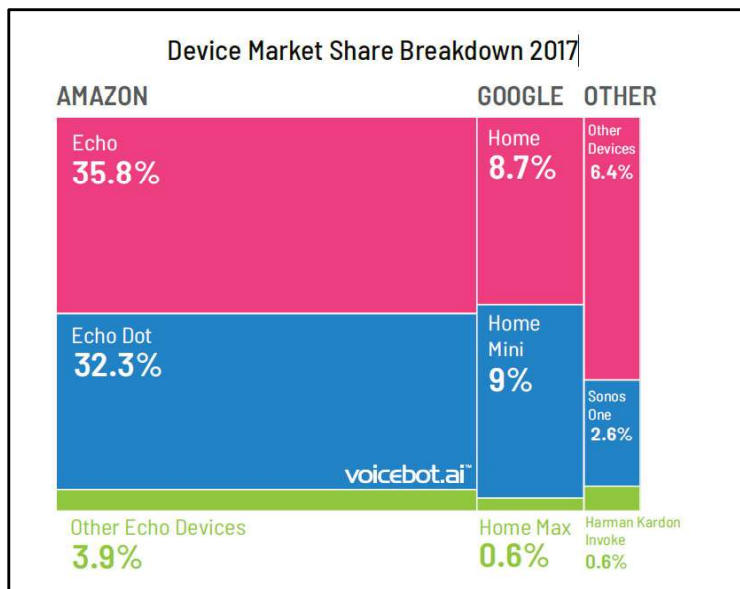
<sup>495</sup> “Introducing S2, New App and OS for Sonos,” Sonos Community Blog, 2020 (accessed: <https://en.community.sonos.com/product-updates/introducing-s2-new-app-and-os-for-sonos-6841762>).

<sup>496</sup> “Introducing S2, New App and OS for Sonos,” Sonos Community Blog, 2020 (accessed: <https://en.community.sonos.com/product-updates/introducing-s2-new-app-and-os-for-sonos-6841762>).

<sup>497</sup> “Sonos S2 Update: Everything You Need To Know,” What Hi\*Fi, June 8, 2020 (accessed: <https://www.whathifi.com/advice/sonos-s2-update-everything-you-need-to-know>). Emphasis added.

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**Smart Speaker Device U.S. Market Share  
Voicebot, Measured In Terms Of Installed Base  
January 2017**



358. Amazon did not launch overlapping smart speaker groups until September 2018.<sup>622</sup> But Amazon's U.S. market share for Echo Dot and Echo or Plus products *fell* between 2017 and 2019 (*i.e.*, period before and after the launch of overlapping smart speaker groups by Amazon in September 2018), as shown in the following graphic:<sup>623</sup>

<sup>622</sup> "Alexa is Now Even Smarter—New Features Help Make Everyday Life More Convenient, Safe, and Entertaining," Amazon Press Center, September 20, 2018 (accessed: <https://press.aboutamazon.com/2018/9/alexa-is-now-even-smarter-new-features-help-make-everyday-life-more-convenient-safe-and-entertaining>).

<sup>623</sup> "Smart Speaker Consumer Adoption Report," Voicebot.ai, March 2018, p. 11.

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**Comparison of Sonos and Google Products<sup>1155</sup>**

655. As shown in the foregoing graphic, their products differ, and Sonos does not have a competitive counterpart to Google smartphones, smart displays, smart dongles, and smart mesh router systems. There are also differences between the features and functionalities between Sonos and Google’s products (*see* **Exhibit 14.0, Exhibit 14.1, Exhibit 14.2, Exhibit 14.3, Exhibit 14.4 and Exhibit 14.5**).

656. Chris Chan, Senior Product Manager at Google, testified that Sonos and Google are not direct competitors.<sup>1156</sup> According to Mr. Chan, Sonos offers more dedicated home theater products, which cater to “premium” customers, while Google’s speakers cater to “non-premium” space.<sup>1157</sup>

657. Even among smart speakers, in addition to the differences in form factors, Sonos and Google largely are in different market segments. Sonos focuses more on audiophiles and those most interested in high quality sound from their speakers than does Google.<sup>1158</sup> According to a

<sup>1155</sup> Malackowski Supplemental Report, pp. 30-32; Google Store (accessed: [https://store.google.com/?&43700028976493334&gclid=EAIaIQobChMIgZfKht\\_1-AIVK\\_jBx3dzQc\\_EAAYASAAEgLRNPD\\_BwE&gclsrc=aw.ds&hl=en-US](https://store.google.com/?&43700028976493334&gclid=EAIaIQobChMIgZfKht_1-AIVK_jBx3dzQc_EAAYASAAEgLRNPD_BwE&gclsrc=aw.ds&hl=en-US)).

<sup>1156</sup> Deposition of Chris Chan, November 29, 2022, pp. 96, 102-103.

<sup>1157</sup> Deposition of Chris Chan, November 29, 2022, pp. 102, 116.

<sup>1158</sup> Interview of Mr. Chan; SONOS-SVG2-00053537-574 at 545; SONOS-SVG2-00055769 at 806; “Sonos One Review: The Best Smart Speaker For Audiophiles,” The Guardian, February 15, 2018 (accessed: [www.theguardian.com/technology/2018/feb/15/sonos-one-review-best-smart-speaker-audiophiles-amazon-alexa](http://www.theguardian.com/technology/2018/feb/15/sonos-one-review-best-smart-speaker-audiophiles-amazon-alexa)); “How Smart-Speaker Maker Sonos Plans to Take on Apple, Google and Amazon,” Variety.com, June

March 2021 interview of Sonos's CEO, Patrick Spence, Sonos "plays" in the "home premium segment."<sup>1159</sup> Generally speaking, Google smart speakers are more mainstream and cater to price conscious customers.<sup>1160</sup>

658. As I explained above, Google target customers are not just in the speaker space; Google's customers often buy Google smart speakers for voice assistance technologies, as well as for many other features relating to the smart home.<sup>1161</sup> This is consistent with testimony of Mr. Chan, who testified that in his experience, "those that are more attracted to high-end audio prefer Sonos and those that are more interested in the intelligence of the Google Assistant in controlling their smart home prefer our smart speaker devices."<sup>1162</sup>

659. Mr. Chan also testified that Sonos smart speakers are offered at "different price points" and Sonos has a "different brand from when people think about smart speakers."<sup>1163</sup> Mr. Chan also testified that Sonos's products are more premium than Google's accused Nest speaker products and that users do not view Google as having a brand capable of the premium audio that Sonos is capable of.<sup>1164</sup>

660. The Sonos speakers are also more expensive with fewer features than Google's speakers (see **Exhibit 14.1 and Exhibit 14.2**). For example, while the Sonos Five speaker sells for \$549, the Nest Hub Max is currently Google's most expensive smart device, and it sells for almost 70% less at only \$175.<sup>1165</sup> However, this product is different than anything that Sonos offers.

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20, 2018 (accessed: [https://variety.com/2018/biz/features/sonos-apple-google-amazon-1202850159/?sub\\_action=logged\\_in](https://variety.com/2018/biz/features/sonos-apple-google-amazon-1202850159/?sub_action=logged_in)).

<sup>1159</sup> "Sonos CEO On Tech Competition: We're The Story Of Software Eating Audio," Yahoo Finance, March 10, 2021 (<https://www.yahoo.com/video/sonos-ceo-tech-competition-story-175816392.html>).

<sup>1160</sup> Interview of Mr. Chan.

<sup>1161</sup> GOOG-SONOSNDCA-00056235-241, at 235; GOOG-SONOSNDCA-00056580-600, at 586, 594; GOOG-SONOSNDCA-00058647-666 at 653; GOOG-SONOSNDCA-00056673-721, at 681; GOOG-SONOSNDCA-00056500-572, at 505; "Review: Google Home Is A Win (And Better Than The Amazon Echo)," Yahoo Finance, November 3, 2016 (accessed: <https://finance.yahoo.com/news/review-google-home-win-better-130033351.html>); "Google Home brings Google's Smarts To Your Living Room," TechCrunch, November 3, 2016 (accessed: <https://techcrunch.com/2016/11/03/google-home-review/>).

<sup>1162</sup> Deposition of Chris Chan, November 29, 2022, p. 97.

<sup>1163</sup> Deposition of Chris Chan, November 29, 2022, pp. 100-101, 108.

<sup>1164</sup> Deposition of Chris Chan, November 29, 2022, p. 115.

<sup>1165</sup> "Five," Sonos website (accessed: [www.sonos.com/en-us/shop/five](http://www.sonos.com/en-us/shop/five)); "Compare Smart Speakers And Displays," Google Store (accessed: [https://store.google.com/us/magazine/compare\\_nest\\_speakers\\_displays?hl=en-US](https://store.google.com/us/magazine/compare_nest_speakers_displays?hl=en-US)); "Nest Hub Max Smart

In addition to its functionality as a speaker, the Nest Hub Max boasts a 10-inch, high-definition touchscreen that can be used for watching content, a built-in camera for video calls and home monitoring, gesture control (*i.e.*, the device can be controlled via hand gestures), among other distinguishing features.<sup>1166</sup>

661. According to the Google Form 10-K for fiscal year ended December 31, 2021, Google considers its competitors to be Amazon and Apple in the smart speakers/digital assistant provider space; Amazon, AppNexus, Criteo, and Meta in the online advertising space; and Amazon and Apple in digital content and application provider space.<sup>1167</sup> Notably, Sonos is not listed as a competitor to Google.<sup>1168</sup> Chris Chan, a Senior Product Manager at Google, explains that he does not consider Sonos as a direct competitor; the two companies target different customers and their products are aimed at different niches.<sup>1169</sup>
662. Similarly, it appears that Sonos does not always or strictly view Google as a direct competitor in the home speaker space. As Sonos's CEO Patrick Spence noted in an interview regarding the introduction of Google's more affordable speakers, Sonos "didn't respond by competing directly" and [i]nstead[] leveraged services [Google] provide[s], such as by offering [Google's] voice assistants on a . . . Sonos speaker."<sup>1170</sup>
663. Mr. Malackowski stated that the "Sonos Play: 5, and its successor Sonos Five, directly competed with Google Home Max during the damages period."<sup>1171</sup> Mr. Malackowski disregarded that Google Home Max was discontinued in December 2020, shortly after the November 2020 hypothetical negotiation date for the '885 patent.<sup>1172</sup> There is also evidence

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Display With Google Assistant – Charcoal," Best Buy website (accessed: <https://www.bestbuy.com/site/nest-hub-max-smart-display-with-google-assistant-charcoal/6348562.p?skuId=6348562>).

<sup>1166</sup> "Compare Smart Speakers And Displays," Google Store (accessed:

[https://store.google.com/us/magazine/compare\\_nest\\_speakers\\_displays?hl=en-US](https://store.google.com/us/magazine/compare_nest_speakers_displays?hl=en-US)).

<sup>1167</sup> Alphabet Inc.'s Form 10-K for fiscal year ended December 31, 2021, pp. 6-7.

<sup>1168</sup> Alphabet Inc.'s Form 10-K for fiscal year ended December 31, 2021, pp. 6-7.

<sup>1169</sup> Interview of Mr. Chan; Deposition of Chris Chan, November 29, 2022, pp. 100-101,

<sup>1170</sup> "Sonos CEO Patrick Spence Sounds Off About Big Tech Behaving Badly," Time, July 24, 2022 (<https://time.com/6199829/sonos-ceo-sounds-off-on-big-tech/>).

<sup>1171</sup> Malackowski Supplemental Report, p. 31.

<sup>1172</sup> "Google Discontinues The Google Home Max," The Verge, December 14, 2020 (accessed: <https://www.theverge.com/2020/12/14/22175243/google-home-max-discontinued-smart-speaker-support>).

*Google LLC v. Sonos, Inc., Case No. 3:20-cv-6754*  
 Rebuttal Expert Report of W. Christopher Bakewell

**Exhibit 13.0**

Summary Of Smart Speaker Features Based On Sonos Surveys <sup>(1)</sup>

	Alpine 2018 <sup>(2)</sup> Aug.-Sept. 2018	Brand Tempo 2018 <sup>(3)</sup> Aug.-Sept. 2018	Brand Tempo 2019 <sup>(4)</sup> Aug.-Sept. 2019	Monaco Speaker Report 2019 <sup>(5)</sup> September 2019	Brand Tempo 2020 <sup>(6)</sup> September 2020	Brand Tempo 2021 <sup>(7)</sup> Aug.-Sept. 2021
<b>Sound quality, maximum volume</b>						
Sound quality	✓	✓	✓	✓	✓	✓
It sounds good no matter where I am						✓
<b>Brand</b>						
Is a technology innovator						✓
It provides a good shopping experience on its website						✓
It provides excellent customer support						✓
Offers the best audio products						✓
Is a leader in smart home sound systems				✓		✓
High quality/premium brand						✓
Its range of audio products meet all my needs						✓
Trust brand	✓					
<b>Reliability, Durability and Quality</b>						
It seems like a high quality product	✓					
Durability/product lifespan	✓				✓	
It always plays audio reliably						✓
Waterproof	✓			✓		
Weatherized (rain and splashproof, can withstand hot and cold ambient temperatures)	✓					
<b>Ease of Use</b>						
User-friendly/ease of use	✓	✓	✓		✓	
Easy set-up		✓				✓
It's easy to control						✓
Easy access to all of my music		✓				✓
<b>Wi-Fi and Bluetooth Connectivity Features</b>						
Wifi connection (including its use for streaming content)	✓	✓	✓	✓	✓	
Bluetooth capabilities (control, play content over bluetooth)	✓	✓	✓	✓	✓	
<b>Battery and charging</b>						
Battery life	✓			✓		
Charging dock	✓					
Wireless charging				✓		
USB-C charging				✓		
Is battery powered		✓				

*Google LLC v. Sonos, Inc., Case No. 3:20-cv-6754*  
 Rebuttal Expert Report of W. Christopher Bakewell

**Exhibit 13.0**

Summary Of Smart Speaker Features Based On Sonos Surveys <sup>(1)</sup>

	Alpine 2018 <sup>(2)</sup> Aug.-Sept. 2018	Brand Tempo 2018 <sup>(3)</sup> Aug.-Sept. 2018	Brand Tempo 2019 <sup>(4)</sup> Aug.-Sept. 2019	Monaco Speaker Report 2019 <sup>(5)</sup> September 2019	Brand Tempo 2020 <sup>(6)</sup> September 2020	Brand Tempo 2021 <sup>(7)</sup> Aug.-Sept. 2021
<b>Compatible with music streaming services/apps</b>						
Compatibility and integration with music streaming services	✓	✓				
Easy access to streaming services/internet		✓	✓		✓	
It works well with services and apps I already use						✓
The ability to play content directly from my music services apps or Airplay			✓			
<b>Voice assistant</b>						
For the Alexa/Google Assistant integration	✓					
Alexa Built-In	✓					
Google Assistant Built-In	✓					
Voice-activated, can control with voice assistant	✓	✓				
Support for multiple voice assistants		✓	✓	✓	✓	
Support for a single voice assistant				✓		
<b>Look, design, size and weight</b>						
Aesthetic, design, sleek/modern design, fit in my home	✓	✓	✓	✓	✓	✓
The look and feel of the product			✓		✓	
Light weight	✓					
Comes in a variety of colors		✓		✓		
Integrated clips or straps for mounting				✓		
Ability to mount to surfaces with magnets				✓		
<b>Surround sound</b>						
Surround sound/wireless surround sound		✓				



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**Exhibit 13.0**

Summary Of Smart Speaker Features Based On Sonos Surveys <sup>(1)</sup>

	Alpine 2018 <sup>(2)</sup> Aug.-Sept. 2018	Brand Tempo 2018 <sup>(3)</sup> Aug.-Sept. 2018	Brand Tempo 2019 <sup>(4)</sup> Aug.-Sept. 2019	Monaco Speaker Report 2019 <sup>(5)</sup> September 2019	Brand Tempo 2020 <sup>(6)</sup> September 2020	Brand Tempo 2021 <sup>(7)</sup> Aug.-Sept. 2021
<b>Multiple speakers in a system</b>						
Ability to expand the system over time		✓	✓		✓	✓
It works well as a system						✓
Play the same song throughout my home		✓				
Group speakers of the same brand	✓			✓		
Play different music in different rooms		✓				
Play in multiple rooms		✓				
<b>Controlling the smart speaker with an app</b>						
Control (playback) directly from app		✓	✓			
Ability to control wireless speaker(s)/music from an app	✓	✓				
The ability to control the playback of audio in or out of my home			✓		✓	
<b>Compatible with phone, TV, or other smart products</b>						
It improves video watching experience						✓
It works seamlessly with the TV(s) in my home/can integrate TV audio		✓				✓
It offers a variety of ways to connect to the audio products						✓
It integrates with other products I own by this brand	✓					
Integration with my (smart) home automation system			✓		✓	
Speakerphone capability (for calls)				✓		
<b>Can tune/adapt to the room</b>						
Ability to tune your speaker/wireless speaker to a room		✓				
Sound adapts to space device is in				✓		
<b>Technology</b>						
It has the latest technology features/uses the latest technology					✓	✓
It provides software updates so it gets better over time						✓

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**Exhibit 13.0**

Summary Of Smart Speaker Features Based On Sonos Surveys <sup>(1)</sup>

	Alpine 2018 <sup>(2)</sup> Aug.-Sept. 2018	Brand Tempo 2018 <sup>(3)</sup> Aug.-Sept. 2018	Brand Tempo 2019 <sup>(4)</sup> Aug.-Sept. 2019	Monaco Speaker Report 2019 <sup>(5)</sup> September 2019	Brand Tempo 2020 <sup>(6)</sup> September 2020	Brand Tempo 2021 <sup>(7)</sup> Aug.-Sept. 2021
<b>Location of Use</b>						
It's something I can use in any room of my house	✓					
To use in my outdoor space	✓					
To use in my indoor space	✓					
<b>Portability</b>						
Portable/can take on the go	✓					✓
Small enough to fit in a purse or small bag	✓					
<b>Special Content, Favorite Media, and Games</b>						
It provides access to exclusive curated content						✓
Special access to content (e.g. Apple Music for Apple products)					✓	
<b>Environmental Impact</b>						
It makes sustainable products						✓
It's environmentally friendly						✓
<b>Other Features</b>						
Ability to store content locally on the device for offline playback				✓		
Party mode				✓		
Compatibility with digital music file types		✓				

**Notes and Sources:**

- (1) A checkmark (✓) denotes that the feature is included in the survey.
- (2) SONOS-SVG2-00062840-886.
- (3) SONOS-SVG2-00054685-730.
- (4) SONOS-SVG2-00063114-151.
- (5) SONOS-SVG2-00063289-341. Superior sound quality and acceptable sound quality are combined as one feature sound quality. 12+ hours battery life, 10+ hours battery life and 8+ hours battery life are combined as one feature battery life.
- (6) SONOS-SVG2-00053423-536.
- (7) SONOS-SVG2-00053854-970.

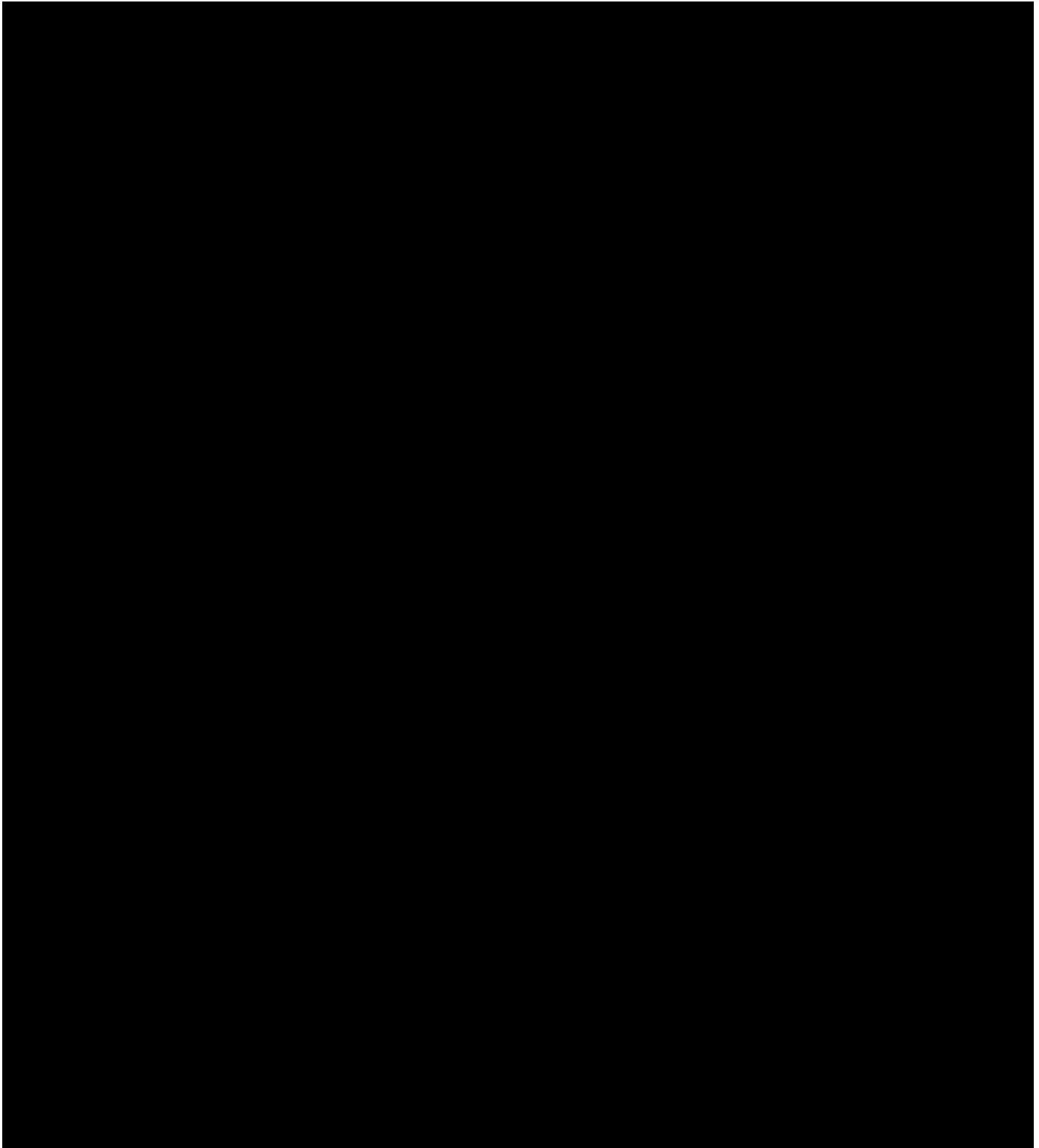
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**Exhibit 13.1**

Summary Of Smart Speaker Features Based On Google Surveys <sup>(1)</sup>



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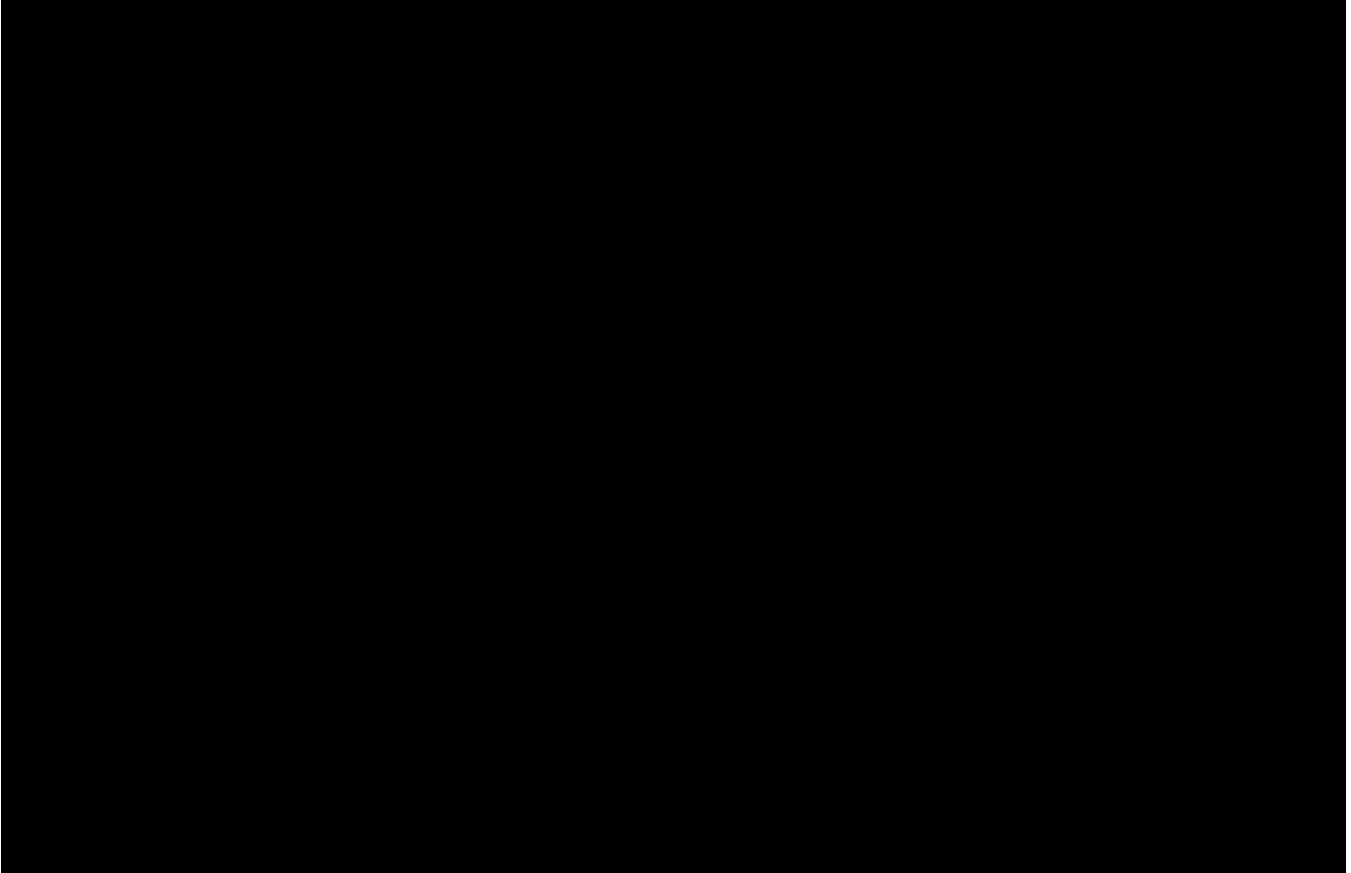
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**Exhibit 13.1**

Summary Of Smart Speaker Features Based On Google Surveys <sup>(1)</sup>

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**Notes and Sources:**

- (1) A checkmark (✓) denotes that the feature is included in the survey.
- (2) GOOG-SONOSNDCA-00059049-136.
- (3) GOOG-SONOSNDCA-00059049-136.
- (4) GOOG-SONOSNDCA-00056601-657.

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**Exhibit 14.0**

**Summary Of Sonos Home Theater Product Features**








			
	Sonos Beam <sup>(1)</sup>	Sonos Amp <sup>(3)</sup>	Sonos Arc <sup>(2)</sup>
<b>Release Date</b>	June 2018	February 2019	June 2020
<b>Price (As of December 2022)</b>	\$449.00	\$699.00	\$899.00
<b>Features:</b>			
<b>Smart Speaker Voice Enabled</b>	No Yes	No Only when connected to another voice enabled Sonos speaker	No Yes
<b>Virtual Personal Assistant ("VPA") Technology Controls</b>	Sonos Voice Control, Google Assistant, Amazon Alexa	Capacitive touch controls	Sonos Voice Control, Google Assistant, Amazon Alexa
<b>Supported Audio Platforms Video Streaming Capability Design</b>	Capacitive touch controls Sonos app TV remote Direct audio streaming not supported None Five amplifiers One tweeter Four midwoofers Three passive radiators	Sonos app -- Direct audio streaming not supported None Digital amplifier -- --	Capacitive touch controls Sonos app TV remote Direct audio streaming not supported None Eleven amplifiers Three tweeters Eight midwoofers
<b>Connectivity</b>	Non-portable 802.11b/g/n/ac WiFi Apple AirPlay 2 Ethernet Not bluetooth capable Not line-in capable HDMI Far-field microphone Trueplay Adjustable EQ	Non-portable 802.11b/g/n/ac WiFi Apple AirPlay 2 Ethernet Not bluetooth capable Line in HDMI None Trueplay EQ	Non-portable 802.11b/g/n/ac WiFi Apple AirPlay 2 Ethernet Not bluetooth capable Not line-in capable HDMI Far-field microphone Trueplay Adjustable EQ
<b>Microphones Other Features</b>	Home Theater Audio Format support Speech Enhancement Night Sound	Home Theater Audio Format support	Home Theater Audio Format support Speech Enhancement Night Sound

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### Exhibit 14.1

### Summary Of Sonos Speaker Features

							
	Sonos Play:5 <sup>(1)</sup>	Sonos One <sup>(2)</sup>	Sonos Move <sup>(3)</sup>	Sonos One SL <sup>(4)</sup>	Sonos Five <sup>(5)</sup>	Sonos Beam <sup>(6)</sup>	Sonos Room SL <sup>(7)</sup>
Release Date	November 2016	October 2017	September 2019	September 2019	June 2020	April 2021	March 2022
Discontinued Date	June 2020	–	–	–	–	–	–
Price (As of December 2022)	–	\$219.00	\$399.00	\$199.00	\$199.00	\$179.00	\$159.00
Features:							
Smart Speaker	No	Yes	Yes	No	No	Yes	No
Voice Enabled	No	Yes	Yes	No	No	Yes	No
Virtual Personal Assistant ("VPA") Technology	None	Sonos Voice Control, Google Assistant, Amazon Alexa	Sonos Voice Control, Google Assistant, Amazon Alexa	None	None	Sonos Voice Control, Google Assistant, Amazon Alexa	None
Controls	Capacitive touch controls	Capacitive touch controls	Capacitive touch controls	Capacitive touch controls	Capacitive touch controls	Buttons	Buttons
Supported Audio Platforms	Sonos app	Sonos app	Sonos app	Sonos app	Sonos app	Sonos app	Sonos app
Video Streaming Capability	Direct audio streaming not supported	Direct audio streaming from Amazon Music, Audible, Pandora, Spotify, and	Direct audio streaming not supported	Direct audio streaming not supported	Direct audio streaming from Amazon Music, Audible, Pandora, Spotify, and	Direct audio streaming not supported	Direct audio streaming not supported
Design	None	None	None	None	None	None	None
	LED lights	LED lights	LED lights	LED lights	LED lights	LED lights	LED lights
	Six amplifiers	Two amplifiers	Two amplifiers	Two amplifiers	Six amplifiers	Two amplifiers	Two amplifiers
	Ten tweeters	One tweeter	One tweeter	One tweeter	Three tweeters	One tweeter	One tweeter
	Two midwoofers	One midwoofer	One midwoofer	One midwoofer	Three midwoofers	One midwoofer	One midwoofer
	Non-portable	Non-portable	Non-portable	Non-portable	Non-portable	Portable	Portable
	802.11b/g/n/ac WiFi	802.11b/g/n/ac WiFi	802.11b/g/n/ac WiFi	802.11b/g/n/ac WiFi	802.11b/g/n/ac WiFi	802.11b/g/n/ac WiFi	802.11b/g/n/ac WiFi
	Apple AirPlay 2	Apple AirPlay 2	Apple AirPlay 2	Apple AirPlay 2	Apple AirPlay 2	Apple AirPlay 2	Apple AirPlay 2
	Fire TV	Fire TV	Fire TV	Fire TV	Fire TV	Not Fire TV compatible	Not Fire TV compatible
	Not Bluetooth capable	Not Bluetooth capable	Not Bluetooth capable	Not Bluetooth capable	Not Bluetooth capable	Bluetooth 5.0	Bluetooth 5.0
	Line-in	Not line-in capable	Not line-in capable	Not line-in capable	Line-in	Not line-in capable	Not line-in capable
Connectivity	None	Fire-field microphone	Fire-field microphone	None	None	Fire-field microphone	None
	Trueplay	Trueplay	Automatic Trueplay	Trueplay	Trueplay	Automatic Trueplay	Not supported
Microphones	None	Adjustable EQ	Adjustable EQ	Adjustable EQ	Adjustable EQ	Adjustable EQ	Adjustable EQ
Other Features		Humidity resistant	Dustproof and waterproof	Humidity resistant	Humidity resistant	Dustproof and waterproof	Dustproof and waterproof
			Drop resistant	Not drop resistant	Not drop resistant	Drop resistant	Drop resistant
						Sound Sync	

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## Exhibit 14.3

## Summary Of Acquired Google Streaming Device Features

								
<b>Release Date</b>	July 2013	September 2015	September 2015	November 2016	October 2018	September 2020	September 2022	May 2019
<b>Discontinued Date</b>	September 2015	September 2018	January 2019	September 2020	September 2022	—	—	—
<b>Price (As of December 2022)</b>	—	—	—	—	—	\$29.99	\$49.99	\$149.00
<b>Features:</b>								
Smart Speaker	No	No	No	No	No	No	No	Built-in Smart Speaker
Voice Enabled	No	No	No	Yes	No	Yes	Yes	Yes
Virtual Personal Assistant	None	None	None	Google Assistant	None	Google Assistant	Google Assistant	Google Assistant
Controls	HDMI Plug	Google Home app	Dongle	Dongle	Dongle	Google Home app	Google Home app	Capacitive touch controls
Audio Streaming Capability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Google Home app
Video Streaming Capability	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Design</b>								
Connectivity	802.11b/g/n/ac Wi-Fi	802.11b/g/n/ac Wi-Fi	802.11b/g/n/ac Wi-Fi	802.11b/g/n/ac Wi-Fi	802.11b/g/n/ac Wi-Fi	802.11b/g/n/ac Wi-Fi	802.11b/g/n/ac Wi-Fi	Bluetooth® 5.0
	Micro-USB	Micro-USB	Micro-USB	Micro-USB	Micro-USB	USB-C	USB-C	802.11b/g/n/ac Wi-Fi
	—	—	—	—	—	Ethernet port	Ethernet port	AC power adapter
Microphones	—	—	—	—	—	—	—	No
Charging	micro-USB	micro-USB	micro-USB	micro-USB	micro-USB	—	—	3 five-field microphones
Gaming	Gaming Cast	Game Casting	—	—	Game Casting	—	—	AC power adapter
<b>Supported Streaming Platforms</b>	YouTube Pandora Spotify Apple Music Netflix Vudu Hulu HBO Go Google Play Movie and TV HBO Now Showtime CBS Disney Movies Anywhere NFL Sunday Ticket MLB.com At Bat MLS UFC TV & UFC Fight Pass NBA 2015-16 Sling TV Watch ESPN Fox Sports Go WWE Network	YouTube Pandora Spotify Apple Music Netflix Vudu Hulu HBO Go Google Play Movie and TV HBO Now Showtime CBS Disney Movies Anywhere NFL Sunday Ticket MLB.com At Bat MLS UFC TV & UFC Fight Pass NBA 2015-16 Sling TV Watch ESPN Fox Sports Go WWE Network	YouTube Pandora Spotify Apple Music Netflix Vudu Hulu HBO Go Google Play Movie and TV HBO Now Showtime CBS Disney Movies Anywhere NFL Sunday Ticket MLB.com At Bat MLS UFC TV & UFC Fight Pass NBA 2015-16 Sling TV Watch ESPN Fox Sports Go WWE Network	YouTube Pandora Spotify Apple Music Netflix Vudu Hulu HBO Go Google Play Movie and TV HBO Now Showtime CBS Disney Movies Anywhere NFL Sunday Ticket MLB.com At Bat MLS UFC TV & UFC Fight Pass NBA 2015-16 Sling TV Watch ESPN Fox Sports Go WWE Network	YouTube Pandora Spotify Apple Music Netflix Vudu Hulu HBO Go Google Play Movie and TV HBO Now Showtime CBS Disney Movies Anywhere NFL Sunday Ticket MLB.com At Bat MLS UFC TV & UFC Fight Pass NBA 2015-16 Sling TV Watch ESPN Fox Sports Go WWE Network	YouTube Pandora Spotify Apple Music Netflix Vudu Hulu HBO Go Google Play Movie and TV HBO Now Showtime CBS Disney Movies Anywhere NFL Sunday Ticket MLB.com At Bat MLS UFC TV & UFC Fight Pass NBA 2015-16 Sling TV Watch ESPN Fox Sports Go WWE Network	YouTube Pandora Spotify Apple Music Netflix Vudu Hulu HBO Go Google Play Movie and TV HBO Now Showtime CBS Disney Movies Anywhere NFL Sunday Ticket MLB.com At Bat MLS UFC TV & UFC Fight Pass NBA 2015-16 Sling TV Watch ESPN Fox Sports Go WWE Network	YouTube Pandora Spotify Apple Music
<b>Other Features</b>			Stream to Multiple Speakers					Smart Home Control Parental Controls

**Notes & Sources:**

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Google LLC v. Sonos, Inc., Case No. 3:20-cv-6754  
Rebuttal Expert Report of W. Christopher Bakewell

Exhibit 14.4

Summary Of Accused Google Display Features

	Google Home Hub /Nest Hub <sup>(1)</sup>	Nest Hub Max <sup>(2)</sup>	Nest Hub (2nd gen) <sup>(3)</sup>
Release Date	May 2019	September 2019	March 2021
Discontinued Date	March 2021	--	--
Price (As of December 2022)	--	\$229.00	\$99.99
Features:			
Smart Speaker	Built-in Smart Speaker	Built-in Smart Speaker	Built-in Smart Speaker
Voice Enabled	Yes	Yes	Yes
Virtual Personal Assistant ("VPA")	Google Assistant	Google Assistant	Google Assistant
Controls	Capacitive touch controls	Capacitive touch controls	Capacitive touch controls
	Google Home app	Google Home app	Google Home app
Audio Streaming Capability	Chromecast built-in	Chromecast built-in	Chromecast built-in
Video Streaming Capability	Chromecast built-in	Chromecast built-in	Chromecast built-in
Design	Smart Display: 7-inch touchscreen 1024 x 600	Smart display: 10" HD touchscreen 1280 x 800	Smart Display: 7-inch 1024 x 600
	Full-range speaker for crystal clear sound	Speaker: 2 x 18 mm 10W tweeters, 1 x 75 mm 30W subwoofer	Full-range speaker with 1.7 in (43.5 mm) driver
Connectivity	802.11b/g/n/ac Wi-Fi Bluetooth® 5.0	802.11b/g/n/ac Wi-Fi Bluetooth® 5.0	802.11b/g/n/ac Wi-Fi Bluetooth® 5.0
Microphones	2 far-field microphones	2 far-field microphones	3 far-field microphones
	Voice match technology	Voice match technology	Voice match technology
Charging	15W power adapter	30W power adapter	30W power adapter
Camera	DC power jack No camera	DC power jack 6.5-megapixel camera 127-degree wide field of view and auto-framing	DC power jack No camera
Supported Streaming Platforms	YouTube Start+ Disney+ Netflix Hulu Paramount+ YouTube TV Sling TV STARZ Ultrasound sensing Ambient EQ light sensor Light Sensor Face Match	YouTube Start+ Disney+ Netflix Hulu Paramount+ YouTube TV Sling TV STARZ Ultrasound sensing Ambient EQ light sensor Light Sensor Face Match Quick gestures Hands Free Audio Calls	YouTube Start+ Disney+ Netflix Hulu Paramount+ YouTube TV Sling TV STARZ Ultrasound sensing Ambient EQ light sensor Light Sensor Face Match Quick gestures Hands Free Audio Calls Soli sensor for Motion Temperature sensor Sleep Sensing Mic and camera off
Other Features			

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